

**WILDLIFE ANALYSIS  
NATIONAL FORESTS IN NORTH CAROLINA  
PISGAH NATIONAL FOREST  
APPALACHIAN RANGER DISTRICT**

**Northside Timber Sale**

Introduction

This report documents the findings of the wildlife analysis (WILDA) of the proposed Northside Timber Sale on the Appalachian Ranger District, Yancey County, North Carolina. The analyzed area for wildlife is defined by the watershed divide at Spivey Gap from the Cane River drainage to the Nolichucky River drainage as the eastern perimeter; No Business Ridge, Tennessee and Flat Top Mountain, NC as the northern perimeter; High Rocks to Little Bald as the southern perimeter; with the western perimeter being Little Bald Creek of the Spivey Creek drainage and Big Branch Creek of the Granny Lewis Creek drainage within Tennessee (Compartments 53, 55 & 56 in NC and Compartments 395 & 412 in TN). Compartment 56 in Yancey County has been included even though it is outside of this watershed for two reasons; a 4 acre unit has been proposed in this compartment; the black bear sanctuary and habitat would logically include this compartment. The total acreage of Forest Service lands considered for wildlife habitat equals 2075 acres in TN and 2888 acres in NC. The private land ownership is found within compartment 412 in Tennessee and is estimated to be 340 acres. In the Unaka Ranger District evaluations, the private land use was reported as being small farms, residences, and forested. Therefore, the entire analyzed area for wildlife is 5,303 ac. While this area does not define the entire watershed, much of the remaining lands are privately owned and will be considered in this analysis only in the context of overall effects to wildlife habitat characteristics.

The Land and Resource Management Plan (LRMP) for the Nantahala and Pisgah National Forests includes standards and guidelines for the Forest including wildlife habitat for management indicator species (MIS). The standards are intended to protect, manage, and where possible, enhance wildlife resources. This analysis will focus on the potential effects of the proposed activities that would most likely affect wildlife resources. All the proposed timber harvest units are within Management Area 3B which emphasizes providing a sustainable supply of timber and providing for wildlife species that benefit from limited motorized access. Recreational use in Management Area 3B includes hiking, hunting, camping and other activities.

New Information Since 2000 Decision

Unit 1 was dropped from the original harvest proposal due to mortality of trees caused by Southern Pine Beetle (SPB). The white pine found on this unit has been killed by SPB and the understory deciduous forest type is now free to grow. It is expected that this unit will have a substantial increase in large, woody debris during future years as the dead pine trees, averaging 16" in diameter fall to the forest floor. Pine woody debris has a short life span, either standing or downed, as a softwood species, it decomposes quickly.

## Description of Alternatives

There were four alternatives evaluated for this project area including one no-action alternative (Alternative 1) and three action alternatives. The charts below give brief descriptions of the action alternatives. Refer to the Environmental Assessment (EA) for complete descriptions of the alternatives.

### ALTERNATIVE 2

Unit #	Compartment	Proposed Harvests	Additional Proposed Treatments	Acres*
1	56	None	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals	4
2	55	Two-aged harvest 15-25 sqft/acre residual BA	Manual Site Preparation with chainsaw felling; unmerchantable trees not marked as residuals	15
3a	53	Two-aged harvest 15-20 sqft/acre residual BA	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals	15
3b	53	Two-aged harvest 15-20 sqft/acre residual BA -----	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals ----- Clip Individual grape stems leaving grape arbors where designated	13 ----- 13
4	53	Thin (60-70 sqft/acre)		6
5	53	Two-aged harvest 15-20 sqft/acre residual BA	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals	16

\*Acreage figures are approximate.

+ Currently there is a Southern Pine Beetle (SPB) epidemic on the Appalachian Ranger District. Unit 2 is considered high risk for SPB attack. In the event of SPB infestation, SPB would be controlled by cutting and removing all infested pine trees and all pine trees within 100 feet of any infested tree within the existing boundaries of this unit.

### ALTERNATIVE 3

Unit #	Compartment	Proposed Harvests	Additional Proposed Treatments	Acres*
1	56	None	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals	4
2	55	Two-aged harvest 15-25 sqft/acre residual BA	Manual Site Preparation with chainsaw felling; unmerchantable trees not marked as residuals	15
3a	53	Two-aged harvest 15-20 sqft/acre residual BA	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals	13***
3b	53	Two-aged harvest 15-20 sqft/acre residual BA -----	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals ----- Clip Individual grape stems leaving grape arbors where designated	7*** ----- 13
5	53	Two-aged harvest 15-20 sqft/acre residual BA -----	Manual Site Preparation with chainsaw felling unmerchantable trees not marked as residuals ----- Prescribed Burn for Advanced Oak Release	14*** ----- 35

\*Acreage figures are approximate.

+ Currently there is a Southern Pine Beetle (SPB) epidemic on the Appalachian Ranger District. Unit 2 is considered high risk for SPB attack. In the event of SPB infestation, SPB would be controlled by cutting and removing all infested pine trees and all pine trees within 100 feet of any infested tree within the existing boundaries of this unit.

\*\*\* Unit 3a: Changes from Alternative 2 include dropping two acres of occupied velvet covert snail habitat from the proposed treatment area for harvest and site preparation.

Unit 3b: Changes from Alternative 2 include dropping six acres of occupied velvet covert snail habitat from the proposed treatment area for harvest and site preparation.

Unit 5: Changes from Alternative 2 include dropping two acres of suitable snail and amphibian habitat from the proposed treatment area for harvest and site preparation.

In addition, we propose manual release of any know butternut trees (*Juglans cinerea*) in Unit 3a by clipping the competing vegetation and providing them free room to grow.

These changes also apply to Alternative 4.

**ALTERNATIVE 4**

<b>Unit #</b>	<b>Compartment</b>	<b>Proposed Harvests</b>	<b>Additional Proposed Treatments</b>	<b>Acres*</b>
1	56	None	Site Preparation with herbicides and Prescribed Burning ----- Supplemental Planting of northern red oaks as needed to reach desired stocking levels of hard mast species	4 ----- 4
2	55	Two-aged harvest 15-25 sqft/acre residual BA	Site Preparation with herbicides and Prescribed Burning ----- Supplemental Planting of northern red oaks as needed to reach desired stocking levels of hard mast species	15 ----- 15
3a	53	Two-aged harvest 15-20 sqft/acre residual BA	Site Preparation with herbicides	13
3b	53	Two-aged harvest 15-20 sqft/acre residual BA -----	Site Preparation with herbicides and Prescribed Burning ----- Supplemental Planting of northern red oaks as needed to reach desired stocking levels of hard mast species ----- Clip Individual grape stems leaving grape arbors where designated	7 ----- 7 ----- **6
5	53	Two-aged harvest 15-20 sqft/acre residual BA -----	Site Preparation with herbicides and Prescribed Burning ----- Supplemental Planting of northern red oaks as needed to reach desired stocking levels of hard mast species ----- Prescribed Burn for Advanced Oak Release	14 ----- 14 ----- 35

\*Acreage figures are approximate.

+ Currently there is a Southern Pine Beetle (SPB) epidemic on the Appalachian Ranger District. Unit 2 is considered high risk for SPB attack. In the event of SPB infestation, SPB would be controlled by cutting and removing all infested pine trees and all pine trees within 100 feet of any infested tree within the existing boundaries of this unit.

\*\* Unit 3b: Changes from Alternatives 2 and 3 include treating the grape stems on 7 acres harvested as part of the site preparation with herbicides and proposing to manually treat the remaining 6 acres

## Method

Information for this analysis was collected in six ways:

- 1) Forest inventory and preliminary habitat surveys were conducted by Colleen McGinnis, former Silviculturist, and Linda Randolph, Forester, Appalachian Ranger District.
- 2) Forest prescriptions and Biological Evaluations for past timber sale activities for that portion of the Cherokee National Forest in TN within the analyzed area were conducted by Joseph McGuiness, North Zone Wildlife Biologist, Unaka Ranger District.
- 3) Additional information on Regional Forester's Sensitive (01/02) and Forest Concern (02/02) wildlife species and Management Indicator Species (MIS) was obtained from North Carolina Wildlife Resources Commission (NCWRC), USDI Fish and Wildlife Service (USFWS), Cherokee National Regional Forester's Sensitive and Forest Concern wildlife species lists, and North Carolina Natural Heritage Program (NCNHP) records.
- 4) Determination of effects to wildlife habitat in timber sale environmental assessments (EAs) and WILDAs (Big Creek & Warden Road EAs & Granny Lewis EA) completed within the past four years were re-visited. Surveys and specialists' (USFWS & NCWRC) conclusions used in these EAs and WILDAs were considered for this proposal.
- 5) Wildlife habitat surveys conducted on March 27 and April 20, 1998 and completed on June 30, 1998 by Sandy Florence, Wildlife Biologist, Appalachian Ranger District, were based on the species list compiled by 1-3 above. Additional surveys were completed on May 20, 1999 with the assistance of Matthew Eldridge, Technician, Appalachian Ranger District and Dennis Helton, Technician, Grandfather Ranger District. Surveys were completed on October 6, 2000 and occupied habitat delineation for Forest Concern species *Inflectarius subpalliatu*s, was completed on November 6, 2000. This species was added to the project analysis based on the initial survey results.
- 6) Linda Randolph, Forester, Appalachian Ranger District, and Robin Kastler, Forest Fire Ecologist, coordinated potential prescribe burn proposals for grass/forb, and advance oak competition reduction.

This analysis has been prepared based on the best available information at the present time.

## Existing Condition

This watershed is representative of the age class distribution common throughout the district, with a majority of forest between 41 and 100 years of age. Approximately 42% percent of the watershed is at an optimum mast producing age. Private land is found within compartment 412 in Tennessee concentrated along State roads. The Environmental Assessment done for the Granny Lewis timber proposal on the Unaka Ranger District determined that private residences were likely to increase due to the new interstate being built in the area. This private land use and State Road 19W probably restrict wildlife movement and reduces the quality of habitat within the southwest portion (Compartment 412) of this watershed. Riparian areas and seeps are numerous throughout both the watershed and the proposed harvest units. Older forests (100+ years of age) are fully represented comprising approximately 23% of the area. Grass/forb and early successional habitats are under represented, even when considering recent timber sales in

the watershed. Table 1 displays the existing forest habitats Forest Service lands within the area analyzed, including the Unaka Ranger District in Tennessee (both suitable and unsuitable acres).

Private inholdings and surrounding land often assist in providing grass/forb habitat to some degree. Private grass/forb habitat is usually highly disturbed by both humans, livestock, and dogs; therefore, is unavailable to wildlife dependent on grass/forb except that portion within 100' of forest cover. The private land within this analyzed area does not provide grass/forb habitat except in the north-east portion; therefore, utilization of this grass/forb is limited due to spatiality. The following table summarizes the existing habitat:

**Table 1.** Current Habitat and/or Forest Conditions of the Wildlife Analyzed Area for the Northside Timber Sale.

Habitat/Forest Type	Existing	Change considering maximum proposed treatment
Grass/Forb	<1%	remains <1%
Early Successional (0-10 years)	2%	increase 1%
Mature Forest (61-100 years)	59%	decrease 1%
Mid Successional (11-60 years)	19%	no change
101+ years	23%	no change
Hard Mast Producing (41-120 years)	42%	decrease <1%
Open Road Density	1.6 m/sq mile	no change

#### Threatened, Endangered and Regional Forester's Sensitive Species (T, E & S) and Forest Concern Species Considered in this Analysis

The Pisgah and Nantahala National Forests maintains lists of the current T, E (06/01) & S (01/2002) species. Forest Concern (02/02) species on the Pisgah and Nantahala National Forests were also considered in this analysis. Appendix A lists the species that were dropped from further consideration based on one or more of the following reasons: (1) lack of suitable habitat, (2) the species has a well-known distribution that does not include the analyzed area, (3) no state historical record, or (4) suitable habitat is located outside the proposed project area for effects analysis.

One sensitive and four Forest Concern species are (1) known to occur within the project area, (2) likely to occur because: (a) habitat occurs within the project area, and (b) the species is/was known to occur within the analyzed area; or (3) may occur because: (a) habitat occurs within the project area that is similar to habitat where the species is known to exist and (b) because there is a known county occurrence record near the analyzed area, even though they were not seen during field surveys. Table 2 summarizes the species considered in detail for this project proposal.

**Table 2.** Threatened, Endangered, and Regional Forester's Sensitive Species (T, E, & S) and Forest Concern Species (FC) evaluated for this analysis.

Species	Common Name	Type+	Likelihood of Occurrence	Criteria*
<i>Plethodon welleri</i>	Weller's Salamander	S	not likely to occur	1
<i>Dendronica cerulea</i>	Cerulean Warbler	FC	may occur	1, 2
<i>Plethodon ventralis</i>	Southern Zigzag Salamander	FC	may occur	1, 2
<i>Glyphyalinia vanattai</i>	Honey Glyph Snail	FC	may occur	1, 2
<i>Inflectarius subpalliatu</i>	Velvet Covert Snail	FC	known to occur	3

+ S = Regional Forester's Sensitive Species, FC = Forest Concern Species

\* 1 - NC Natural Heritage Program occurrence record in county

2 – May occur in project area based on 1 and habitat presence

3 – Present in area based on field surveys

### Additional Analysis of Threatened and Endangered Species

This analysis includes 2075 acres in Tennessee, mainly on the Unaka Ranger District on the Cherokee National Forest where recent environmental assessments have been done. The biological evaluation for the Unaka Ranger District (RD) Environmental Assessment concluded that there were known occurrences of Peregrine Falcon and habitat for the Gray Bat and Indiana Bat. That evaluation concluded that the project activities proposed on the Unaka RD would result in a small loss of available habitat for the Indiana Bat and potential risk of individual losses, but this was not likely to adversely affect the Indiana Bat. There would not be an effect on the Gray Bat. The Unaka RD sought an informal consultation with the USDI Fish and Wildlife Service to verify its conclusions. The Unaka RD received a letter of concurrence with their evaluation conclusions in April 1996.

The project evaluation on the Unaka RD concluded their proposal would result in Peregrine Falcon modifications of use and flight patterns during project implementation, but it was not likely to adversely affect the Peregrine Falcon. The district again sought informal consultation with USDI Fish and Wildlife Service and a letter of concurrence with the Unaka RD evaluation conclusions was received in July 1996. To summarize the Unaka RD project evaluation, the effect of implementing their project would result in; no effect on the Gray Bat, not likely to adversely affect the Peregrine Falcon, and not likely to adversely affect the Indiana Bat.

The majority of the Northside Timber Sale is within the same watershed as the Unaka RD project evaluation. In June 1998, copies of the Unaka RD project biological evaluation, informal consultation correspondence with USDI Fish and Wildlife Service, together with the Northside Timber Sale (TS) proposal were sent to the Asheville office of the USDI Fish and Wildlife Service for their comments and analysis regarding the effects to those species evaluated for the Unaka RD project by the Northside Timber Sale. On July 13, 1998, the Asheville office of USDI Fish and Wildlife Service concurred with the Tennessee office of the USDI Fish and Wildlife Service opinion and determined that Gray Bat, Peregrine Falcon and Indiana Bat would not be affected by the Northside Timber Sale proposal.

## Evaluation of Effects to Regional Forester's Sensitive Species

### **Weller's Salamander (*Plethodon welleri*)**

*Plethodon welleri*, Weller's salamander, a Regional Forester's Sensitive species, was observed on Flat Top Mountain in 1945. The species is thought to persist at this location and all element of occurrence records for this salamander in North Carolina are from mountain tops. The proposed project will not affect any habitat on Flat Top Mountain; therefore, there will be no effect to this salamander by any alternative considered.

## Evaluation of Effects to Forest Concern Species

### **Cerulean Warbler (*Dendronica cerulea*)**

Cerulean Warbler, a Forest Concern species, has a potential for occurring in units 3b, 4, and 5 within the Northside TS proposal. These stands exhibit cove hardwood communities and many of the characteristics for Cerulean Warbler habitat. Due to the low number of documented populations in North Carolina, an Interim Habitat Management Policy for the National Forests in North Carolina has been initiated and states that a survey be done within a April 25 - June 15 timeframe, to assess whether this bird is present. The surveys were completed on May 20, 1999 by Dennis Helton and Sandy Florence and resulted in no Cerulean Warblers being found.

Habitat information from known Cerulean Warbler habitat demonstrates the species use of gap openings. Some naturally occurring gap openings are to be expected in a forest, however, their typical single tree size is not a large enough opening for species use as demonstrated by the population occurrence records across the landscape. Therefore, a determination of no effect (positive or negative) was made for Alternative 1. Vegetative conditions of the cerulean's habitat would be the large, cove forest with open understories, which occur in areas within units 3b, 4, and 5; however, no Cerulean's were found during survey efforts. Therefore, a determination of no effect was made for Alternatives 2, 3 and 4.

### **Southern Zigzag Salamander (*Plethodon ventrali*)**

An element of occurrence for the Southern zigzag salamander, a Forest Concern species, has been recorded south of State Highway 19W and units 1 and 2, on the north slopes of Big Creek. There are only 5 populations on the NC Natural Heritage program records for this salamander in the state of North Carolina; however, these records may be inaccurate and are from 15 year old or older observations. Personal communication with Dr. Petranka, University of North Carolina, Biology Department (Feb. 25, 1999), determined that this species closely resembles the redback salamander and may have been mis-identified. Dr. Petranka noted that research studies carried out in the summer and fall of 1998 by the North Carolina State Museum at the site of the historic element of occurrence found no zigzag salamanders. Due to the dry summer and fall conditions recorded that year, Dr. Petranka stated the survey carried out by the museum is not conclusive for verifying the historic occurrence without follow-up surveys during late fall, when moist, warm days cause the salamander to be its most active.

The salamander has been found in mature cove forests and these forest conditions are found in units 3b, 4, and 5. Surveys for the zigzag salamander in the area immediately below unit 2 and the closed portion of Forest Road 278 were completed by Sandy Florence on April 20, 1998, resulting in no zigzag salamanders being found. Salamander surveys of unit 4 and unit 3b, below



the road, were determined to have the highest potential habitat for this species. On May 20, 1999, Matthew Eldridge surveyed both sites resulting in four common salamander species being found. The larger area of habitat found west of the units in the Spivey Creek drainage was not surveyed as it was determined to be outside of the area of potential effects by this proposed action.

While no confirmation of *Plethodon ventralis* at the historic element of occurrence site can be made, the highest potential habitat for most salamander species can be found in the stand immediately below the existing closed portion of Forest Service road 278 that will be utilized in harvesting unit 2 for Alternatives 2, 3, and 4.

The riparian area protection listed within the Aquatic Resource Analysis (AQUA) for this proposed project will protect any salamanders that may be utilizing the riparian habitat bordering unit 2. There is approximately 116 acres of this habitat along State Road 19W connected to the historic element of occurrence. Further protection of salamander potential habitat will be made by the seep protection mitigation measure in the Aquatic Analysis (AQUA) within other units. Due to the existing cool, shaded nature of the closed portion of FS road #278 road bed which is grass/forb covered, salamanders species, other than zigzag, were found to be utilizing this linear strip to move between habitat areas during proposal surveys conducted on April 20, 1998 by Sandy Florence.

Salamander movement is greatly restricted for any population in the area of the historic element occurrence south of State Highway 19W by the paved roadbed and traffic flow. Gravel is likely needed on this closed portion of Forest Service road 278 to accommodate heavy logging equipment in harvesting proposed unit 2. Minimal gravel should be used and the roadbed ripped and seeded post-harvest to provide continued herbaceous coverage. It was determined in discussions with Dr. Petranks (personal communication 2/25/99), avoiding late fall and early spring harvesting would greatly reduce the likelihood of salamander mortality by heavy equipment utilizing this closed portion of FS road 278.

While there is little likelihood of zigzag salamanders utilizing this roadbed due to the inadequate habitat characteristics present in units 1 and 2, a determination was made that the hauling activities to harvest unit 2 in Alternatives 2, 3, and 4 may impact individuals but is not likely to cause a trend to federal listing or a loss of viability. To ensure potential mortality or displacement are kept to a minimum, the following mitigation measures will be in place, to minimize potential impacts to the zigzag salamander or its habitat by the hauling activities with Alternatives 2, 3, and 4. Alternative 1 will not remove the overstory white pine that would allow these sites to revert to a hardwood forest type. Pine stands are typically not preferred habitat due to the lack of leaf litter, pine needles do not retain the cool, moist conditions of a leaf layer. Potential salamander habitat is expected to increase as the hardwood forest type ages once the pine overstory is removed. All alternatives, including the "no action" Alternative 1, will increase the salamander habitat where SPB mortality has occurred and large, woody debris accumulates within unit 1. There will be long term positive effects to salamander habitat for Alternative 1 on 4 acres and Alternatives 2, 3, and 4 on 19 acres, with the hauling road mitigation measures. Mitigation measures for the hauling road (closed portion of FS road 278) will include:

1. Any gravel used to strengthen the road carrying capacity of this closed portion of FS road 278, as shown on the wildlife habitat map, will be minimal within the riparian area crossings and the road will be ripped and re-seeded in grass/forb cover within the season of operation for unit 2.

2. The season of harvesting activity will be outside of the November 1 - April 30 time-frame to avoid disturbance during late fall and early spring.

### **Honey Glyph Snail (*Glyphyalinia vanattai*)**

Honey glyph snail, a Forest Concern species, has been recorded in Yancey County, however little is known regarding their populations or preferred habitat other than moist leaf litter in ravines and wooded mountain sides. Dr. R. Caldwell, Cumberland Mountain Research Center, (personal communication 3/1/99) suspects this species may be in cove hardwood forest types. With the standards and guidelines for riparian areas and seeps protection recommendation, potential habitat would be adequately protected within other forest types. Surveys of the cove forest types found in units 4 and 3b were completed on May 5, 1999 by Matthew Eldridge and Sandy Florence. Although 14 species were identified from the surveys, no honey glyph snails were found. Follow-up surveys were completed in Unit 5, Unit 3a and 3b (above Forest Service road 5508) where an additional 17 species were identified, however no honey glyph snails were found. Therefore, there will be no known effect to this species by any alternative considered.

### **Velvet Covert Snail (*Inflectarius subpalliatu*s)**

Velvet Covert, *Inflectarius subpalliatu*s, a Forest Concern species, was found during the surveys to occur within units 3a, 3b & unit 4. There are six records in the heritage database of this species, literature and occurrence records list the general habitat for this species as leaf litter, rocks, and logs above 2000' elevation in cove forests.

Dr. Caldwell stated that decreasing the shade would result in a drying effect to soil and leaf litter and also raise the temperature of this habitat, resulting in a negative effect on the snail population and its habitat. As little is known about this, or any other gastropod's habitat preferences, any affects determinations are based on no disturbance to the vegetative cover as having no or the least affect. There will be no effect by Alternatives 1, 3 and 4.

The cove and riparian conditions extend to the west of the proposed project into the Spivey Creek drainage encompassing approximately 232 acres. Forest Service road 5508 is gravel with some grass covering and is most likely acting as a barrier to the small populations and amount of habitat above the road in unit 3b. A ridge of poor snail habitat extends between unit 3b and the small population found in moist, rocky habitat on the south end of unit 3a (2 acres). The high potential habitat for this snail species is found extensively further down slope in the Spivey Gap drainage. Although this species was not found within the high suitable rocky, moist habitat in unit 5, this habitat will not be harvested in Alternative 3 and 4. The prescribed burn proposed in unit 5 by Alternative 3 and 4 will be done during leaf off season and not affect the snails or amphibians which will be dormant and/or under the soil surface.

Alternative 2, will harvest the occupied *Inflectarius subpalliatu*s habitat in Unit 3a and 3b. The thinning of unit 4 as proposed by Alternative 2 would not decrease the canopy cover to the extent of creating negative effects on the snail population or its habitat. Individuals may be negatively affected by the harvesting activity in unit 4; however, the overall effect to the snail population would be minimal or have no effect (Caldwell/Florence personal communication 5/20/99). Therefore, Alternative 2 may impact individuals but not likely affect populations with the thinning activity in unit 4. However, Alternative 2 will impact individuals and likely cause negative effects to the population and habitat by harvesting the occupied habitat in Unit 3a and

3b. Alternatives 3 and 4 do not propose to harvest occupied habitat in Unit 3a or 3b or thin Unit 4, and will leave the vegetative cover on the southern portion of Unit 5 where a large number of rocks exist which may provide habitat conditions for snails and amphibians (2 acres). Therefore, there will be no effects to the overall snail populations or habitat by Alternatives 3 or 4.

**Table 3.** Summary of Effects to Forest Concern Species by Alternative  
(with implementation of LRMP standards & guidelines and mitigation measures).

Species	Common Name	ALTERNATIVES			
		1	2	3	4
<i>Plethodon welleri</i>	Weller's Salamander	0	0	0	0
<i>Dendronica cerulea</i>	Cerulean Warbler	0	0	0	0
<i>Plethodon ventralis</i>	Southern Zigzag Salamander	0	+/	+/	+/
<i>Glyphyalinia vanattai</i>	Honey Glyph Snail	0	0	0	0
<i>Inflectarius subpalliatius</i>	Velvet Covert Snail	0	-	0	0

0 = no negative or positive effect

+/ = potential impacts to individuals, long-term positive effect to habitat

- = negative effect to habitat and likely to result in negative effects to population

#### Evaluation of Effects to Management Indicator Species (MIS)

Black bear, Eastern wild turkey, raccoon, ruffed grouse, Solitary Vireo were chosen as MIS representative of this watershed and the proposed projects which are all in Management Area 3B. This decision is based on recommendations, by community and management type, in the Environmental Impact Statement (vol. II, appendix L) for the Nantahala and Pisgah National Forests. Existing habitat conditions and evidence of use by these species, substantiated the selection decision.

#### **Black Bear**

Black bear requires a large home range to sustain reproduction and a healthy population, generally free of disturbance associated with open road vehicle use and hunter access. The environmental assessment analysis area is within the Flat Top Mountain Bear Sanctuary and has an open road density of 1.6 mi/sq mi . Gated or restricted vehicle access roads and temporary roads have been shown to not affect bear movement within its home range. Traffic volume is the largest factor in bear avoidance of roads with the other factor of avoidance being hunting pressure. Beringer (1986) found that there was no road or home range avoidance on Class II or III roads. Brody (1984) found open gravel roads affected bears if the density reached approximately 2 mi/sq mi (1.25 km/km<sup>2</sup>) .

No bear hunting is allowed within the sanctuary; however, illegal hunting will influence bear road avoidance if substantial levels of illegal hunting occurs. Joe McFee, NC Wildlife Resources Commission, stated that due to a high presence of law enforcement by the area game wardens, poaching within the bear sanctuary is not a problem. The Land and Resource Management Plan, Amendment 5 (LRMP), for the Nantahala and Pisgah National Forests road standards for Management Area 3B is 0.5 miles open road per square mile. Within the wildlife analyzed area in NC and the Pisgah National Forest open road density is 1.1 mi/sq mi including State Road 19W. Although studies have demonstrated, on low traffic volume roads such as FS road 278,

bears and their movements are not affected, this open road density is approximately double the Nantahala and Pisgah National Forests Land Resource Management Plan (LRMP) standard.

There has been considerable research on habitat use by bears on the Pisgah National Forest. The results of two of the habitat use studies were used to analyze bear habitat (Brody 1984, Beringer 1986). Although the two papers do not assign exactly the same percentages to bear use of habitat, they both demonstrate white oak-red oak stands, as found in unit 3a, as the most widely used habitat. Bears utilize habitat in the hard mast forests within the 50-69 year age class 65-82% of the year. Cove forests with few hard mast species, as found in units 3b and 5, and yellow poplar forest types, as found in unit 4, are not generally utilized (<10%) by black bears. Mark Jones, Black Bear Project Leader, NC Wildlife Resource Commission, stated that their studies of reproduction, mortality, and population age structure for Yancey County and the Flat Top Bear Sanctuary indicate the population of black bear is stable and growing. The most recent update of the MIS assessment concurs with this population trend.

Unit 3a is a preferred forest type, producing both a hard mast overstory and a soft mast huckleberry understory. Even with the close proximity of State highway 19W, site specific topography allows this stand to provide good habitat in its current condition for black bear. The stand is 81 years old and, as demonstrated by multiple research on bear habitat utilization, it is declining in use by bears as it ages. Past management of this stand type and aspect have demonstrated a high percentage of oak in the regenerating stands.

Alternative 1 would result in a short term no effect and a long term negative effect determination by not increasing the diversity of succession within this forest type. To achieve a higher area of habitat for the bear in harvest units 3a through 5, marking guidelines have been developed to retain the producing hard mast component. These marking guidelines would result in, on-going utilization for hard mast dependent species, and potential den trees within the newly developing stands.

Alternative 4 proposes to manually plant northern red oak in all proposed units, including unit 1, which will improve the hard mast component in future stands. Currently, 42% of the area analyzed provides this hard mast forest type of mature, hard mast producing age, with this proposal reducing that by less than 1% and with the residual tree marking guidelines in place, this reduction will be less. The site preparation proposed by Alternatives 3 and 4 utilizing prescribe burning in unit 5 will enhance the overstory oak component in the resulting stand, even though oak will not be the dominant overstory species. The manual or herbicide site prep proposed in the action alternatives will not affect the black bear habitat in the short term but will increase the hard mast component in future stands which will benefit the bear.

Grapes have been shown to provide a significant portion of the soft mast used by bears, with blueberries and huckleberries supplying the majority of other soft mast. Providing grape arbors protection in all units and protecting soft mast species during planned site preparation by providing specific species to protect, will allow this habitat to persist for the black bear.

The research differs on the amount of use clear cuts receive by bear; but, both agree that clear cuts, rhododendron and laurel thickets provide an important resting habitat, especially during the hot, summer months. Reagan (1991), Brody, and Beringer, all documented the use of regeneration cuts by 20%+ denning female bears. Cove hardwoods, although providing grape and other soft mast, are not used extensively, <10% of the year, by bear (Brody 1984). A

hardwood/pine mixed forest type (Unit 1 & 2) and poplar forest type (Unit 4) stands are also not a preferred habitat component.

Grassy openings offer bears herbaceous plants, many of which are important as spring food. Brush cover types containing Rubus spp., Vaccinium spp., and Prunus spp. are a staple summer and early fall foods (Beeman and Pelton 1980). The current linear grassy openings within this area are surrounded by the brushy food source plants listed. However, some areas of thick blackberries are beginning to be replaced by woody stems. Cutting back these woody stems to maintain the soft mast producing brier thickets will be recommended. A determination is made that the regeneration cuts proposed for units 2 and 5 will benefit the black bear in the long term.

Units 3b and 4 are not providing a substantial amount of black bear habitat and the proposed alternatives will not change the habitat use by bear. Thinning within unit 4, the poplar stand, would have no effect on bear habitat conditions except it would increase the sunlight to the forest floor resulting in an expected increased brushy and herbaceous layer over the short term until the canopy closes again.

#### **Summary of Effects with Management Recommendations Completed**

Black Bear	Increased habitat	Decreased habitat	Net change
Alternative 1	0	0	0
Alternative 2	15 ac – Unit 3a	0	+ 15 ac
Alternative 3	48 ac	0	* + 48 ac
Alternative 4	48 ac long term +26 ac	0	**+ 48 ac long term + 26 ac

\*Alt 3 = Unit 3a plus 35 ac Burn area

\*\*Alt 4 = all of alt 3 plus oak planting in unit 5, 1 & 2 increasing the oak component over a long term period.

#### **Eastern Wild Turkey**

Eastern wild turkey utilize seeps during early spring as they provide warmer conditions and therefore the earliest available vegetation. During winter months, hard mast in the form of acorns provide much of its food needs. A conifer component of hemlock and younger (50 yr or less) pine trees are utilized as thermal cover during winter months. Unlike black bear, wild turkey utilize cove hardwood sites extensively during winter months as they are generally warmer and often provide understory cover, grape arbors, buds, and soft mast species, especially during low acorn yield years.

The protection of grape arbors within proposed treatment units and the retention of briers and other soft mast surrounding openings would be beneficial to this turkey habitat. The habitat across this analyzed area exhibits all of the habitat components for wild turkey except the severely low grass/forb component. The existing grass/forb habitat should be maintained at its maximum/existing size, with fertilizing and/or liming as needed, to ensure continued growth and vigor. Landings within Compartment 53 should be enhanced by cutting any woody tree species regeneration in and around the brush/briar areas attached to many of the grass/forb areas, every 5 years. Combined with the brushy areas surrounding the remnants of old logging debris piles & grass/forb landings, this will enhance the wildlife use of current grass/forb component over the next planning period.

Little private land is found in the area and as such, is not providing the brood habitat. The past timber sale activity in this area increased the available grass/forb component by 20 acres, however it remains below 1% and the LRMP standard of 3%. In the short term, the open condition of the regenerating stands, for up to 20 years, will be used by turkey broods for bug foraging and cover.

Unit 2 is a planted white pine forest type in an older age class which are not usually utilized for thermal cover as white pine does not retain its lower branches, further the present forest floor condition within a pine dominated environment, usually will not provide forbs, grasses, and soft mast. If the basal area of overstory white pine is removed, as proposed in Alternatives 2 - 4, the hardwood regeneration would be released and result in a mixed hardwood/pine forest which provides habitat within the brush layer and forest floor for turkey and many other species. The white pine overstory within Unit 1 has suffered mortality from the SPB, resulting in a naturally regenerating pine/hardwood forest condition. Without site preparation in Unit 1 the stand is regenerating into a pine/hardwood stand, with site preparation this unit will result into a hardwood/pine stand. Due to the high number of large, hard mast producing trees in unit 3a, Alternatives 2, 3, and 4 would reduce the habitat use of this area by adult turkeys; therefore, the marking guidelines to retain hard mast producing residual trees, described as needed to maintain bear habitat, is also recommended for the wild turkey.

Alternative 4 has the long term benefit of ensuring a higher component of hard mast due to the northern red oak planting proposed on all treated acres, including unit 1. Unit 3a is expected to regenerate into the same forest type and hard mast composition as the present stand. Over the long term, regenerating this stand into a young, vigorous acorn production age class will benefit the turkey. Prescribe burn treatment of unit 5 as described in Alternatives 3 and 4 would benefit the wild turkey by producing sprouting of soft mast shrubs and resulting in the long term in a stand with a larger oak component. Alternative 2, proposed to thin unit 4 which will increase the sunlight to the forest floor and therefore, increase the herbaceous layer, improving spring food source availability for the turkey. The protection and enhancement of soft mast species as planned for the ruffed grouse and black bear, will also benefit the wild turkey.

A final determination of alternatives resulted in Alternative 1 having minimal negative short term effects by no increase in grass/forb and soft mast habitat components; Alternative 2 results in minimal positive effects, with the residual tree marking guidelines; Alternatives 3 and 4, with residual tree marking guidelines and the prescribe burn proposal, would result in a greater positive effect for wild turkey habitat. The red oak planting proposed in Alternative 4 for all units which will improve the long-term mast component over the long term and result in the greatest positive affect to wild turkey habitat.

Mike Seamster, Wild Turkey Project Leader, NC Wildlife Resource Commission stated the populations of wild turkey across Yancey County are growing and healthy based on their harvest data records. The most recent update of the MIS assessment concurs with this population trend.

#### **Effects with Management Recommendations Completed**

Wild Turkey	Increased habitat	Decreased habitat	Net change
Alternative 1	4 ac	0	+ 4 ac
Alternative 2	69 ac	0	+ 69 ac
Alternative 3	74 ac	0	+ 74 ac
Alternative 4	74 ac	0	+ 74 ac

## Ruffed Grouse

Ruffed grouse utilize much of the same habitat as wild turkey and would react to treatments within cove hardwood and pine forest types in much the same manner. The past timber sale activities within the analyzed area created 2% 0-10 or early successional habitat and this proposal will increase the early successional habitat by 1 % for a total of 3% across the analyzed area.

Alternative 2 proposes to regenerate the largest number of acres resulting in producing the greater area of regeneration preferred by the ruffed grouse. The southerly portion of unit 5 is currently highly suitable habitat for grouse, with large amounts of grape, a thick shrub height layer of vegetation, with a large birch component, and understory hemlock. The prescribe burn treatment proposed in Alternatives 3 and 4 within unit 5 will allow this habitat to increase as sprouting and re-growth of the shrub layer is the expected result of fire. Providing grape arbors within harvest units, protecting soft mast during planned site preparation, and not harvesting the southern rocky portion of unit 5 would result in Alternative 3 and 4 benefiting ruffed grouse habitat overall.

The lack of availability of grass/forb habitat remains the limiting factor for ruffed grouse populations. The grouse cannot protect its brood from predators as easily as wild turkey's due to their smaller size, therefore make limited use of grass/forb areas larger than 0.5 acre. Ruffed grouse utilize linear grass/forb openings to a much greater degree and maintenance of temporary roads as linear openings would benefit this species.

The final determination of effects resulted in a negative effect for Alternative 1, as the existing early successional habitat ages beyond suitable habitat. The standards and guidelines for grape arbor retention and the proposed harvest, resulted in positive effect for Alternative 2. The same standards and guidelines would be followed in Alternatives 3 and 4, with the addition of no harvest within the southerly portion of unit 5 results and the prescribe burning planned would result in a greater positive effect on Alternative 3. Alternative 4 to plant northern red oak on all treated acres plus Unit 1, therefore this alternative has the greatest positive affect to habitat over the long term.

Joe McFee, NCWRC stated hunting and observation data indicates that Yancey County is maintaining a stable population of ruffed grouse and this analyzed area is average for the county. The most recent update of the MIS assessment concurs with this population trend.

### Summary of Effects with Management Recommendations Completed

Ruffed Grouse	Increased habitat	Decreased habitat	Net change
Alternative 1	4	0	+ 4
Alternative 2	+69	0	+69
Alternative 3	+74	0	+74
Alternative 4	+74	0	+74

## Raccoons

Raccoons inhabit riparian areas, hard mast forest within ½ mile of streams, and older forests with an increased number of den tree availability. Their food sources around riparian communities include crayfish, hard mast, small fish, snails, and salamanders. Within an older forest community, they commonly feed on bird eggs as many interior species of birds are ground-nesting. Many other vertebrates found throughout older forests, such as wood-boring insects in decaying logs, are part of the wide variety diet of this species. Raccoons have been found to establish their dens within ½ mile of streams (Forest MIS assessment).

The current standards and guidelines in the Nantahala and Pisgah National Forests LRMP retain den trees during harvest activities. The riparian and seeps standards and guidelines found in the LRMP will protect much of this species habitat and the large habitat component of older forests within ½ mile of streams will not be affected by this proposal. Retention of hard mast producing species as stated in the marking guidelines will minimize the reduction of suitable habitat, especially in unit 3a. Alternatives 3 and 4 propose to prescribe burn unit 5 to improve the advanced oak, resulting in a greater oak component in the regenerating stand over the long term and a greater amount of soft mast stems over the short term. Alternative 4 proposes to plant northern red oak across all units, which will improve the hard mast component within regenerated stands. Mechanical or herbicide site preparation, as proposed by Alternatives 3 and 4, will not affect raccoon. The reduction in soft mast available due to the clipping of grape stems will have no effect as grape arbors will be maintained in all stands.

The most recent update of the MIS assessments determined raccoon populations across the Nantahala and Pisgah National Forests to be increasing. It should be noted that a large population of raccoon may impact the populations of Forest Concern species; zigzag salamander, honey glyph snails, and velvet covert snails. Cerulean Warblers nest in the smaller limbs of trees and raccoons do not threaten their nesting success where this warbler is present. The final determination of effects resulted in no effect for Alternative 1, with Alternatives 2, 3 and 4 having a negative effect to less than 1% of the mature forest across the analyzed area.

#### **Summary of Effects with Management Recommendations Completed**

Raccoon	Increased habitat	Decreased habitat	Net change
Alternative 1	0	0	0
Alternative 2	0	50 ac	-50 ac
Alternative 3	0	34 ac	-34 ac
Alternative 4	0	34 ac	-34 ac

#### **Solitary Vireo**

Solitary Vireo prefer pine and mixed pine/hardwood forest types, usually above 3500' in elevation. The mixed pine/hardwood stand in this proposal is within the range of 3500'; therefore, the proposed actions of Alternatives 2 and 3 could negatively affect this species habitat. However, the stand proposed for harvest in these alternatives is within approximately 100-200 feet of State Highway 19W. Kuitnunen (1998) found that bird densities within 50 meters of a well traveled road are lower than forest edges and forested habitat.

Kuitnunen found that factors normally related to edge effect were not the decisive factors for lower bird densities along roadsides and theorized that the following roadside conditions account for low bird densities; (1) high bird densities usually associated with forest edge may depend on the high invertebrate density, not well known along roadside conditions; (2) roadside



characteristics of traffic noise and pollutants; (3) Human disturbance may be stronger near the roads; (4) traffic increases mortality especially during feeding periods with adults carrying food across roads to and from foraging areas to their young; and (5) roadsides increase predation by crows and jays. While this study did not collect data on the Solitary Vireo specifically, being a middle-aged to mature forest habitat species, the influence of State Highway 19W would likely reduce any use of these stands.

Studies (Sauer et al 1995, BBS data) have demonstrated this species has maintained a stable population and the most recent update of the MIS assessment determined the population is increasing. Therefore, there is potential for negatively affecting poor habitat for this species by any of the action alternatives and this habitat was also negatively affected by the SPB caused white pine mortality in unit 1.

#### **Summary of Effects with Management Recommendations Completed**

Solitary Vireo	Increased habitat	Decreased habitat	Net change
Alternative 1	0	4 ac	-4 ac
Alternative 2	0	19 ac	-19 ac
Alternative 3	0	19 ac	-19 ac
Alternative 4	0	19 ac	-19 ac

#### **Additional Birds evaluated as a Result of Presence Recorded**

Surveys completed for the Cerulean Warbler, resulted in 11 bird species utilizing the area of units 3-5, of which 2 were MIS species. The mix of habitat preferences for the 11 species is 8 prefer mature habitat conditions, however 7 of the eight are found in sapling habitat during their life cycle. Cove forest types are preferred by most species found during the surveys. Ovenbird and Pileated Woodpecker were the two MIS species identified and effects were further analyzed for these species. All bird species would be affected by logging operations if they occur during nesting season. However, the operations would affect a maximum of 65 acres and only if all the cutting operations were within the peak nesting season of May-June. Given that; there is little likelihood of all the harvesting being carried out during May-June; many species are able to re-establish nests; maximum treatment Alternative 2 (65 acres) is <2% of the forest within this analyzed area. Over the Nantahala and Pisgah National Forest area, it is determined that this will have no effect on the species population or habitat.

If harvesting or manual site preparation of units 3-5 occur during peak nesting season, there is potential for nests to be destroyed or disturbed. Herbicide site prep of understory tree species to release advanced oak regeneration will have little effect on nests but will cause them to lose their leaf cover over time. The harvesting in Units 2, 3a, 3b, and 5 would remove approximately 70 - 80% of the mature trees and the manual site preparation would cut the understory species competing with the present advanced oak. Given the small acreage of potential disturbance over the analyzed area, the ability of many species to re-establish nests, and one nesting seasons potential for disturbance, there is little likelihood of affecting the overall bird populations in the area. The erosion control seeding of grass/forb species will create a minimal increase in the feeding habitat for some bird species.

#### **Pileated Woodpecker and Ovenbird**

Pileated Woodpecker prefers mature forest but are found in seedling/sapling habitat and are most numerous in mature cove forests and riparian habitat. The most recent update of the MIS assessment found that Pileated Woodpecker populations are increasing across the Nantahala and Pisgah National Forests. The Ovenbird does not demonstrate a strong preference in forest habitat conditions, but is found at a slightly higher incidence, in mature forests. The most recent update of the MIS assessment found the Ovenbird populations are increasing rangewide but may be decreasing locally.

Alternative 1 does not reduce the amount of mature forest habitat and the amount of sapling habitat with large woody debris increases by 4 acres all alternatives even though the mature habitat conditions was lost. Pileated Woodpeckers forage on downed logs and therefore will benefit for the duration of down, large woody debris as the dead white pine fall. Alternatives 3 and 4 reduce the amount of mature cove forest by 21 acres and Alternative 2, by 35 acres. The portion of cove forest below the road in unit 3b exhibits the highest potential habitat characteristics within the project area for Pileated Woodpecker. Thinning unit 4, as proposed by Alternative 2, will allow the remaining trees to increase in diameter and improve the habitat for the woodpecker. As a result of the Forest standards and guidelines that provide for maintaining den trees and riparian area protection, any negative effects of harvesting unit 4, would be minor. The same Forest standards and guidelines will be followed for Alternatives 3 and 4, and not proposing to harvest in the occupied *Inflectarius subpallitus* cove forest areas, will result in reducing the negative effect of harvesting mature forests.

It can be assumed that as the forest ages, habitat conditions improve for this woodpecker; therefore, Alternative 1 would have a positive effect. Ovenbird prefer a upland forest habitat several different tree species of different heights, so would be negatively affected by Alternatives 2, 3 and 4 harvesting unit 3a. The harvesting proposed would alter vegetative conditions from the preferred mature stage; however, this mature forest condition will make up 58% of the analyzed area after treatment and residual trees will be left to create a two-aged stand; therefore, the negative effects would be minimal.

In conclusion, action Alternatives 2, 3 and 4 would result in a minimal negative effect to both species and Alternative 1 would result in no effect. Any negative effects will be minimal due to the minimal habitat affected by the maximum harvest treatment of <2% of the forest within the analyzed area.

**Table 4.** Summary of the nest locations and peak nesting season for bird Management Indicator Species (MIS).

Species	Nest Location/Height	Peak Nesting Season
Solitary Vireo	Trees or Bushes	April - May
Pileated Woodpecker	Tree Cavities	April
Ovenbird	Ground	May - June

#### **Summary of Effects with Management Recommendations Completed**

Pileated Woodpecker	Increased habitat	Decreased habitat	Net change
Alternative 1	0	0	0
Alternative 2	0	-38 ac	-38 ac
Alternative 3	0	-21 ac	-21 ac
Alternative 4	0	-21 ac	-21 ac

### Summary of Effects with Management Recommendations Completed

Ovenbird	Increased habitat	Decreased habitat	Net change
Alternative 1	0	0	0
Alternative 2	0	-15 ac	-15 ac
Alternative 3	0	-13 ac	-13 ac
Alternative 4	0	-13 ac	-13 ac

### Cumulative Effects

Past timber management within this watershed, resulted in 2% in the 0-10 age class or early successional habitat. The spatiality of this habitat was of concern with most of it clustered close to State Highway 19W resulting in increased motorized and human disturbance potential for wildlife utilizing the habitat. However, the Granny Lewis EA included several harvesting units more uniformly spread across the landscape which will benefit species, such as black bear, that are sensitive to motorized vehicles but depend on early successional habitat throughout their lifecycle. This proposal will improve the spatiality of early successional habitat across the landscape. Analysis of road densities within the analyzed area are above the standards and guidelines for black bear with both State Highway 19W and the Granny Lewis road in TN managed as open.

Grass/Forb habitat is at critically low levels within this analysis and the proposed Northside timber sale activities will not significantly increase the habitat. Private land is expected to become more developed into residential housing as the access is improved by the development of State Road 23.

Site preparation activities planned in this proposal include mechanical (Alt 2 and 3) or herbicide (Alt 4) treatment of understory species to enable more shade tolerant species regeneration such as hickory and oak to persist into the overstory of the new stands. This practice will benefit ruffed grouse, wild turkey and black bear species if grape arbors and soft mast species are protected in the hardwood forest types (unit 3b and unit 5) where this attribute of the habitat is significant. The planting of northern red oak proposed by Alternative 4 will increase the oak component in regenerating stands. The prescribe burning on 35 acres, as proposed in Alternatives 3 and 4, will encourage soft mast sprouting and production in the short term and release the seedling oak component in the regenerating forest. The hard mast component within the analyzed area is approximately 42% and the maximum proposed harvest in this project would reduce the hard mast component by less than 1%. These numbers are derived from harvest acreages and do not reflect the hard mast producing species retained in the treatment areas as residuals.

As summarized in the effects to MIS species, past, current, and these proposed actions will result in minor positive habitat benefits to black bear, wild turkey, and ruffed grouse with minor negative affect on raccoon habitat. Three bird MIS will be negatively affected by the proposed action; however, the effects will be minimal, affecting <2% of their present habitat in this analyzed area. Past and current management activities included standards for snag and den tree retention as well as riparian area protection measures.

Past actions of planting white pine above the Southern zigzag salamander habitat reduced the hardwood riparian areas. Historically, building Forest road 278 in its original location further

restricted the salamander movement and habitat. Since closing the portion of this road above the salamander habitat and establishing grass cover, it no longer restricts the salamander movement. This proposed action will allow the riparian area to expand into a more natural vegetative condition. The construction of State Highway 19W split the salamander's habitat and since paving, greatly effected the expansion and movement of the population.

The majority of the velvet covert's habitat is outside of this proposed action. Past timber sale activity below unit 3b constructed a temporary road which is now grass covered and allows snail population movement and interaction but initial construction may have eliminated approximately ½ acre of habitat and likely caused a loss of individuals during construction. FS road 5508 is dividing the population by limiting movement across a gravel-bed road with limited grass cover and likely caused a loss of individuals during construction. Alternatives 2, 3 and 4 will limit snail population movement and interaction across FS road 5508 during the harvest activities when the grass cover will be reduced or eliminated by equipment use of the road; however, the grass cover is expected to return to current conditions within 5 years of the timber sale activity. Alternative 2 will also negatively impact the Forest Concern snail population by affecting individuals and habitat.

#### Mitigation Measures to required to adhere to NFMA, NEPA and the Nantahala and Pisgah LRMP

1. Any gravel used to strengthen the road carrying capacity of the closed portion of FS road 278 that is currently a linear grass/forb opening will be minimal and the roaded surface will be ripped and re-seeded in grass/forb cover during the season of operation for Unit 2, once harvesting is complete.
2. The season of harvesting and road work activity for Unit 2 and the closed portion of FS road 278 will be outside of the November 1 - April 30 time frame to avoid disturbance during late fall and early spring.
3. Any skid trails required for Unit 3a and 3b will avoid crossing the velvet covert occupied habitat where possible. If a skid trail is necessary, the Wildlife Biologist will assist the Timber Sale Administrator in laying it out to minimize impacts on the snail population.

#### Management recommendations to enhance or maintain MIS habitat

1. Protect 1/4 acre grape arbors within harvest units and during chainsaw site preparation activities when soft mast understory species that retain their berries into the fall season (e.g. dogwood, sassafras, serviceberry) will also be protected.
2. Create grass/forb habitat on any landing used during harvesting. To create an adequate forage cover, the landings will be ripped, followed by lime, fertilizer, and seed applications. Expand grass/forb habitat utilizing KV monies generated by this activity where possible.
3. On a 5 year rotation, cut all woody stems encroaching on the areas of dense Rubus spp, and other soft mast brush surrounding the existing grass/forb habitat.
4. Manage the 1.6 mile open segment of FS road 278 as closed to limit the road density to LRMP standard.

5. Leave residual trees will be selected in the following species priority; white oak, red oak, hickory, chestnut and scarlet oak, hemlock, other hardwoods. Selection of these residual trees will be further based on having good form and currently of mast producing size, approximately 14"+.

#### Summary and Determination of Effects

No alternative considered will have an effect on any Forest or Regional Forester's Sensitive wildlife species. Formal consultation with U. S. D. I. Fish and Wildlife Service is not required as there will be no negative effects on candidate, threatened, or endangered wildlife species by any alternative considered in this analysis.

There is a low likelihood of a Forest Concern species, Southern zigzag salamander, *Plethodon ventralis*, being present on the closed portion of FS road 278. However, a determination was made that harvesting activities planned for Alternatives 2 - 4, may impact individuals but is not likely to cause a trend to federal listing or a loss of viability and will increase the potential salamander habitat over the long term.

The population of Forest Concern species, Velvet Covert, *Inflectarius subpalliatu*s, will likely be negatively affected by Alternative 2, which will harvest in occupied habitat. Alternative 2 will also negatively impact individuals by the harvesting activity in thinning Unit 4, however this activity will not affect the overall population. Alternative 3 and 4 proposed treatments will not affect the present population.

\_\_\_\_\_/s/Sandy Florence\_\_\_\_\_  
Sandy Florence, Zone Wildlife Biologist

\_\_\_\_2/6/2002\_\_\_\_\_  
Date

#### Persons Contacted

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## Appendix A

Threatened, Endangered (06/01), Regional Forester's Sensitive (01/02) species or a Forest Concern (02/01) species with Yancey County record of occurrence, however, not evaluated for this proposed project based on no habitat within project area.

Species	Type – rating and list date	Habitat	Reason for elimination
<i>Myotis leibii</i>	Bat – Regional Forester's Sensitive	Cliffs, mines, bridges, caves	No habitat present in project area. No structures affected by proposals.
<i>Paravitrea andrewsae</i>	Snail – Forest concern	Moist, rich soil type	Survey results negative
<i>Paravitrea lamellidens</i>	Snail – Forest Concern	Moist leaf litter on wooded hillsides	Survey results negative
<i>Paravitrea varidens</i>	Snail – Forest Concern	Leaf litter and brambles on Roan Mtn.	Survey results negative
<i>Glphyalinia clingmani</i>	Snail – Forest Concern	High elevation forests in Black Mtn.	Survey results negative
<i>Pallifera hemphilli</i>	Snail – Regional Forester's Sensitive	Acidic soils, usually at high elevations	Survey results negative
<i>Clemmys muhlenbergii</i>	Reptile - Threatened	Bogs and wetlands	No habitat present in project area.
<i>Glaucomys sabrinus coloratus</i>	Mammal - Endangered	High elevation forest, spruce/fir	No habitat present in project area.
<i>Trechus mitchellensis</i>	Beetle – Regional Forester's Sensitive	High elevation forest, spruce/fir	No habitat present in project area.
<i>Sorex dispar</i>	Mammal – Forest Concern	High elevation tallus slopes and boulder fields	No habitat present in project area.
<i>Catharus guttatus</i>	Bird – Forest concern	Spruce/fir forests	No habitat present in project area.

Nantahala & Pisgah National Forests list of threatened, endangered, Regional Forester's sensitive species or a forest concern species without an occurrence record within the county were not considered for this site-specific analysis.